



Alternative Restoration Approach Rationale

for

**Cinque Hommes Creek, McClanahan Creek,
Dry Fork, Omete Creek, and Brazeau Creek
Perry County**

Section 303(d) Listing: *Escherichia coli* Bacteria

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Alternative Restoration Approach For Five *E.coli* Impaired Streams in Perry County

Section 303(d) of the federal Clean Water Act and Chapter 40 of the Code of Federal Regulations (CFR) Part 130 require states to develop total maximum daily loads (TMDLs) for waters not meeting applicable water quality standards. Per 40 CFR §130.7(c)(1), TMDLs must be written to meet water quality standards. In certain instances, implementation actions and other plans may result in attainment of water quality standards more quickly than can be achieved through the TMDL process. Consistent with the U.S. Environmental Protection Agency's [2016 integrated report guidance](#), plans (alone or in combination with other actions) demonstrating that water quality standards will be achieved, may serve as an alternative restoration approach to immediate TMDL development. Where such alternative restoration approaches are appropriate, the Missouri Department of Natural Resources will subcategorize these water quality impairments as Category 5-alt on the 303(d) List of Impaired Waters. Impairments categorized as 5-alt will be considered low priority for TMDL development. However, the Department will continue to assess waters categorized as 5-alt as part of the biennial reporting requirements of the federal Clean Water Act sections 305(b) and 303(d). During this period the Department will also evaluate progress of the alternative approach and reassess the priority for TMDL development.

The Department has determined that activities currently underway or planned, as documented in the Section 319 Perry County Karst Watershed Nonpoint Source Management Plan (Watershed Plan), will result in the attainment of the recreational uses currently impaired by high levels of *Escherichia coli* bacteria (*E. coli*) for five impaired streams in Perry County. In conjunction with Missouri State Operating Permit requirements for point source dischargers, activities in the Watershed Plan address pollutant loading from nonpoint sources and will result in *E. coli* reductions that will restore recreational uses and attain water quality standards in the streams listed in Table 1. Actions contained within the Watershed Plan are widely supported by local stakeholders in Perry County. Additional support and funding are available from the Perry County Soil and Water Conservation District and the Missouri Department of Conservation. As a result of these actions, the Department will identify these stream impairments as Low priority for TMDL development on the 2022 303(d) List.

Table 1. *E. coli* Impaired Streams in Perry County

Water Body ID	Stream Name	Impaired Use(s)*	Applicable Criterion and Water Quality Target
1781	Cinque Hommes Creek	WBCR-B and SCR	206 cfu/100 mL
1786	McClanahan Creek	WBCR-B and SCR	
1792	Dry Fork	WBCR-B	
1794	Omete Creek	WBCR-B and SCR	
1796	Brazeau Creek	WBCR - B	

* WBCR-B = whole body contact recreation category B; SCR = secondary contact recreation

Category 5-alt Components

Implementation of the 319 Perry County Karst Watershed Nonpoint Source Management Plan has commitment and support from stakeholders and local governments in Perry County. Additionally the Watershed Plan addresses the area's karst topography and the endangered Grotto Sculpin, which make this alternative restoration approach a more effective and immediate tool for attainment of water quality standards than development of a TMDL. This document summarizes the information used to determine and demonstrate the acceptability of the alternative approach and provides the rationale for 5-alt categorization. The following is a summary of the information contained in the Watershed Plan that supports the use of the plan as an alternative restoration approach. This approach is expected to result in attainment of water quality standards in the *E. coli* impaired streams in Perry County more rapidly than pursuing development of a TMDL. Specific details are provided within the Watershed Plan and any relevant Missouri State Operating Permits.

1. Description of the alternative approach to be used and how it is expected to result in attainment of water quality standards

The 319 Perry County Karst Watershed Nonpoint Source Management Plan will serve as the primary mechanism for achieving pollutant reductions that will result in attainment of recreational uses currently impaired due to excessive *E. coli* concentrations. The U.S. Environmental Protection Agency (EPA), Region 7 accepted this plan with comments as an alternative to a 319 nine-element watershed plan on May 1, 2020. Targets for implementation are based on load duration curves developed by the Department that identify the *E. coli* loading capacities of the streams at all possible flows. The load duration curves are based on long-term flow data and applicable water quality criteria for the protection of whole body contact recreational uses. Additionally, operating permits issued by the Department to limit point source contributions of *E. coli* loading will, in combination with the Watershed Plan, aid in the attainment of water quality standards.

2. Identification of specific impaired water bodies and pollutants that are addressed by the alternative approach

Figure 3.3 in the Watershed Plan displays the locations of the five *E. coli* impaired water bodies. Applicable water quality standards, including designated uses and water quality criteria, are provided in Section 4.1 of the Watershed Plan. Reducing *E. coli* loads and attaining water quality standards are stated goals of the plan as discussed in Section 5 and Objective 5.1.3. The severity of *E. coli* and other pollutant loading is described by summarizing available monitoring data which are presented in Section 4.2. In addition to reducing *E. coli* loading, the Watershed Plan also aims to reduce nutrient and sediment loading to these streams. Best management practices (BMPs) to reduce loading of these other pollutants may also result in additional reductions of overall *E. coli* loads, especially since sources of nutrients are also widely associated with *E. coli*.

3. Identification of sources causing and contributing to the impairment

Nonpoint sources are identified as the primary source of *E. coli* loading to the impaired water bodies. Nonpoint sources of pollution are not regulated through permits and reductions from these sources rely on the voluntary implementation of BMPs in the watershed. Section 5 of the Watershed Plan identifies contributing nonpoint sources of *E. coli* as well as the reduction actions that will be implemented. Identified nonpoint sources include septic systems and activities associated with livestock production.

In addition to nonpoint sources, point sources in some of the watersheds of the impaired streams also contribute *E. coli* loads. Point sources are regulated by the Department through the Missouri State Operating Permit Program. Effluent from the three permitted facilities in Table 2 may contain *E. coli*. However, all three facilities utilize disinfection technologies to reduce effluent *E. coli* loading to concentrations that do not exceed water quality standards. Sanitary sewer overflows (SSOs) are another potential source of *E. coli* loading to surface waters. Department records show that in the past five years, the Perryville Southeast facility reported only seven SSO events that resulted in discharges entering a waterway. During the same period the SK&M facility reported only one SSO event and the Altenburg & Frohna facility did not report any SSOs. Special condition No. 11 of the permit for the Perryville Southeast facility requires the permittee to develop and implement a program for maintenance and repair of the sewer system. These actions include the elimination of excess inflow and infiltration into the collection system. Existing permit limits and conditions will ensure point source loading will not exceed the loading capacities calculated using load duration curves for the impaired streams, which are displayed on pages 103 – 107 of the Watershed Plan. There are no point source contributors of *E. coli* in the Dry Fork, McClanahan Creek, and Omete Creek watersheds. This point source information is noted within the Watershed Plan in Section 5, but the Department is including the relevant permits as part of the overall 5-alt submittal and record as supplemental information. Permits are also available online at dnr.mo.gov/env/wpp/permits/index.html.

Table 2. Point sources of *E. coli* to the impaired streams

Permit No.	Facility Name	<i>E. coli</i> Limits (yes/no)	Disinfection	Watershed
MO-0051144	Perryville Southeast WWTF	yes	Ultraviolet	Cinque Hommes Creek
MO-0098680	SK&M Water and Sewer Co.	yes	Chlorination	Cinque Hommes Creek
MO-0130010	Altenburg & Frohna WWTF	yes	Chlorination	Brazeau Creek

4. Description of the implementation strategy and an estimate or projection of the time when water quality standards will be met. Address point or nonpoint sources as necessary to attain water quality standards.

Section 6 of the Watershed Plan identifies planned and ongoing actions over a 10 year period. Interim milestones for the first four years of implementation are also provided. The plan uses an adaptive management approach and specifies monitoring activities that will be used to inform BMP implementation and to modify actions as needed. Specific actions noted to address the impaired waters include BMPs to reduce runoff from urban and agricultural lands,

livestock BMPs, and actions to address potential loading from septic systems. The Watershed Plan addresses pollutant inputs to both surface water and groundwater. The plan also identifies critical areas for BMP implementation based on agricultural land use and soils having the highest potential for runoff. Table 7.1 of the Watershed Plan lists BMPs identified by the Department to reduce *E. coli* loading.

5. Identification of available funding for implementation

Section 7 of the Watershed Plan identifies funding opportunities for specific BMPs. Current programs providing funding for implementation activities include the Perry County Soil and Water Conservation District, Environmental Quality Incentives Program funding through the Natural Resources Conservation Service, and the Regional Conservation Partnership Program. As an EPA-accepted watershed based management plan, implementation activities in the watershed are also eligible for Clean Water Act Section 319 funding. Support to fund monitoring activities and citizen outreach efforts is provided by the Missouri Department of Conservation and the U.S. Fish and Wildlife Service. Several other potential federal, state, and non-governmental funding sources are also provided in the Watershed Plan.

6. Identification of all parties committed, and additional parties needed, to implement the alternative approach and their role in implementation

Section 6 of the Watershed Plan identifies numerous federal, state, county, and local groups committed to implementation and their potential roles. These groups include the Department, the Missouri Department of Conservation, Perry County Soil and Water Conservation District, the City of Perryville, the Perry County Commission, Perry County Health Department, Perry County Farm Bureau, the U.S. Fish and Wildlife Service, the L-A-D Foundation, the University of Missouri Extension, and the Natural Resources Conservation Service. Additionally the Watershed Plan notes the support and continued cooperation of the local community, clubs, and volunteers during both the development of the plan and who are in favor of its implementation.

7. Plan for effectiveness monitoring and periodic evaluation to determine if plan is still expected to result in attainment of water quality standards more rapidly than pursuing development of a TMDL

The Watershed Plan identifies timelines for monitoring in Section 6 and provides more specific details on monitoring in Section 8. Monitoring will include both continuous data sondes and grab samples. *E. coli* data will be collected via grab samples. Table 8.1 of the Watershed Plan provides the specific sampling frequency for *E. coli*. The plan includes adaptive management and information collected from monitoring activities will be used to assess BMP performance so that actions can be modified as needed. Success in achieving water quality standards will be determined by the Department through biennial assessments of water quality compliance as required by Sections 305(b) and 303(d) of the federal Clean Water Act. The Department will reevaluate TMDL development schedules and priority rankings of the impaired waters upon development of each consecutive 303(d) List with considerations given towards implementation progress and continued support of the Watershed Plan.

For more information call or write:

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Additional Information:

Current and past 303(d) lists of impaired waters:
dnr.mo.gov/env/wpp/waterquality/303d/303d.htm

Current TMDL prioritization and development schedule:
dnr.mo.gov/env/wpp/tmdl/